that govern the physical . . . and biological worlds . . . . When generalizations are made in ecology . . . there are always variations and usually exceptions." Although this chapter lists most principles found in more classic ecology texts, there is no suggestion of relative importance. Five pages are spent on Shelford's and Liebig's "laws", but the concepts of food and energy chains and Gause's principle are each relegated to one sentence. Attempts to simplify occasionally lead to inaccurate definitions (ecotypes, p. 46). Vogl presents an enlightened, balanced view of succession and of species diversity-stability concepts. Unfortunately, his discussion ends with the proclamation, "Natural diversity should be preserved and restored, and not destroyed and replaced with monotonous monocultures that invite unnatural catastrophes." Many of Vogl's non-ecologist readers are likely to close the book in disgust at this statement. Throughout the later chapters of the book, this occasional confusion of principles with opinions, unfortunately, persists.

Chapters II–VI contain principles relative to resource management, the role of man, and energy. Most of the principles presented are sound and basic. Environmentalists will find here a great deal of support for their views. Unfortunately, principles are not presented persuasively or supported adequately enough to convince a non-believer. These chapters would profit greatly by the inclusion of occasional examples—one example might be worth a thousand principles!

The final chapter, "Ecological Comments", contains a series of vignettes summarizing Vogl's views on many topics ranging from wilderness to chemicals to education. The thrust of this section is that the long-term survival of our civilization will require a basic alteration in the value systems by which many of us live. With this, I wholeheartedly agree! This chapter is thought-provoking and contains much excellent fuel for discussion.

The concept of a book designed to present ecological principles in a format that will make them accessible to people of a wide range of backgrounds and persuasions is laudable. Vogl's approach to ecology is refreshing and generally well-balanced. Unfortunately, the lack of hierarchal arrangement and organization left this reviewer, at some points in the book, with the feeling that she was working her way through something akin to a shopping list. Keeping principles to minimum statements helps simplify a subject best when principles themselves are kept to a minimum. Blank spaces and pages (ostensibly to facilitate marginal comments by the reader) make up approximately 20 percent of the book. The concepts presented might be better remembered if these spaces contained examples, which are notably lacking throughout. A book so rooted in natural resource management ought really to fill the pages with print and expect the reader to provide notepaper as needed!

This book should find its best use in high school and introductory ecology classes as a relatively painless means of introducing principles and generating discussion. Outside readings and laboratory and field experience would add much needed depth to the material presented. It will provide enjoyable recreational reading for practicing ecologists and excellent quotations for the frontispieces of doctoral dissertations. One can't help but wonder what is forthcoming in Book Two!—SUSAN G. CONARD, Department of Botany, University of California, Davis 95616.

Flora of Barro Colorado Island. By THOMAS B. CROAT. ix + 943 pp., 571 photographs + maps and graphs. Stanford University Press, Stanford, CA. 1978. ISBN 0-8047-0950-5. $55.00.

When Gatun Lake, in the Panama Canal Zone, was created in 1911-14, through deliberate flooding by the builders of the Canal, a taller than usual group of hills, largely covered with remarkably natural semi-evergreen moist tropical forest, was cut off as Barro Colorado Island. The forest was set aside as a nature reserve in 1923 and, after

a period of administration by the Institute for Tropical Research (under the direction of the National Research Council), the Smithsonian Institution set up its Tropical Research Institute (STRI) on the island. Thus, there began intensive study of the forest and its animal inhabitants. It would be expected that with the restricted area (15.6 km^2) and the number of taxonomists and ecologists who have studied the plants over more than half a century, the flora would have been comprehensively treated some time ago, but this was not the case.

A list of plants was made by P. C. Standley in 1927 (with supplements in 1929 and 1933) and was followed by the same author's *Flora of the Panama Canal Zone* in 1928, but both of these floras were based almost entirely on herbarium material in the United States National Herbarium. The difficulty of relating such literature to the usually non-flowering material encountered in the field was partly overcome by Dennis H. Knight's key to the trees in sterile condition in his *Field Guide to the Trees of Barro Colorado Island* in 1970. But in 1967, the production of a full-scale flora was begun. The location of its author on the staff of the Missouri Botanical Garden was particularly appropriate in view of the concurrent production there of the multitudinous parts of the *Flora of Panama* by a number of specialists.

Dr. Croat has responded magnificently to the challenge to produce a flora of the island, and he enjoyed the backing of the Missouri Botanical Garden, the Smithsonian Institution and, not least, the National Science Foundation. He acknowledges assistance, over the years, from 81 specialists in particular families and 34 others who gave advice. The result is a flora that is comprehensive and modern in every way.

The Introduction of more than 60 pages covers the climatic characteristics, the geological and soil types, the vegetation types and their habitats (with photographs), the growth forms, the floristic characteristics, "sexual" characteristics and geographical affinities of the flora. Historical and recent changes in the flora are noted and no less than 20 pages are devoted to its phenological characteristics. A history of the Panama Canal Zone is provided with an account of the botanical studies that have been carried out there.

In the Flora itself, there are maps, keys for both floriferous and sterile material and, *mirabile dictu,* 553 well-reproduced photographs of the essential parts of a great many species. There is an index of common names as well as the index of scientific names. About 375 literature references are listed. The classification systems used are those of Scagel and collaborators for the vascular cryptogams, and Engler for the phanerogams. The genera are alphabetized within families, and species are similarly treated within genera. Adventive species are included as well as natives.

The treatment of the individual species (1369 of them) is thoroughly up-to-date and, considering the large number of specialists who gave advice, is surely authoritative. The usual morphological description of each species is supplemented by habitat information, phenological data, seed-dispersal information, and quite detailed information about geographical distribution beyond the Island. For those species where it is known, there is information about pollinators.

Considering the fabulous amount of information contained in this huge book, and its beautiful packaging, its price is extremely reasonable. It may well serve as a model for future floras of intensively studied areas elsewhere in the tropics, and I prophesy that much use will be made in other parts of the neotropics of the information in it about widespread species. All concerned with the production of this magnificent book are to be congratulated.—HERBERT G. BAKER, Department of Botany, University of California, Berkeley 94720.